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09/746,219

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Diego Carmello

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EXAMINER

ELVE, MARIA ALEXANDRA

ART UNIT

PAPER NUMBER

3742

MAIL DATE

DELIVERY MODE

07/10/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                                      |                                        |  |
|------------------------------|--------------------------------------|----------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>09/746,219 | <b>Applicant(s)</b><br>CARMELLO ET AL. |  |
|                              | <b>Examiner</b><br>M. Alexandra Elve | <b>Art Unit</b><br>3742                |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 April 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 13, 14 and 26-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 13, 14 and 26-40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 October 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                        |                                                                   |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/9/08</u> .                                                  | 6) <input type="checkbox"/> Other: _____                          |

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## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 13-14 & 37-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deller et al. (USPN 5,166,120) in view of Muller et al. (USPN 5,686,152).

Deller et al. discloses:

A carrier catalyst containing copper and alkali ions on an annular carrier of surface-active material is defined by the dimensions of the carrier body and the porosity of the finished catalyst. Its total pore volume is 0.6-1.0 ml/g, pores smaller than 4 nm diameter are not present, pores of 8-20 nm diameter constitute at least 80% of the total pore volume and the remainder consists of macropores with a diameter greater than 20 nm (i.e., up to 200 nanometers). The catalyst is suitable for the production of 1,2-dichloroethane by means of the oxychlorination of ethylene.

It is generally known that the above-described pressure drop can be reduced across a bed of annular or spherical catalytic bodies by means of using larger outside diameters and/or lengths of the catalytic bodies. Such a bed is specially advantageous in regard to activity and pressure drop in comparison to beds with other geometries of catalytic bodies. Surprisingly, however, the activity or the conversion, respectively, is increased, in spite of a lowering of the active surface area, if the carrier material of the present invention is used.

The annular carrier catalyst of the present invention, containing copper ions and alkali ions and with the special shape, the described pore volume, and the described pore distribution, thus exhibits a lesser pressure drop than

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traditional hollow extrudates and is more active in spite of the reduced active surface area.

In addition, however, the shaping step can also start with a powdery carrier catalyst which already contains the active component. Gamma aluminum oxide with a specific surface of 120-215 m.<sup>2</sup>/g (BET surface) and a pore volume of 0.6-1.0 ml/g is preferably used as carrier material. This enables one to obtain the stated range of specific surface area and pore volume and ultimately a finished catalyst having an aluminum oxide carrier after impregnation of the carrier with the active components.

A large excess of ethylene is required when using pure oxygen and the excess, non-reacted ethylene must be recirculated. This does not weaken the advantages of the carrier catalyst of the invention in any way. The temperatures in the catalyst bed normally fluctuate at values between 200° and 320°C. and the pressures at 3 to 10 absolute bars. In order to avoid temperature peaks which are too high in the catalytic bed, it is advantageous when carrying out the oxychlorination method using the carrier catalyst of the present invention to graduate the activity of the catalyst in such a manner that the activity in the reactor increases in the direction of product flow in the case of a one-stage method of operation and at least in the first and in the second stages in the case of a multistage operation. The graduation of catalytic activity can take place by means of known measures, e.g. by means of the addition of inert material as diluting agent. However, it is preferable to adjust the particular desired catalytic activity by appropriately varying the copper II chloride concentration of the catalyst and/or by varying the molar ratio of copper II chloride to alkali chloride in the catalyst.

Deller et al. does not teach a monolith. Deller et al. discloses a carrier of 11 ± 2mm but does not teach all the exact dimensions of instant claims or the exact material. The types of materials and dimensions chosen are a choice in design and substitutions of known equivalent structures may be made. In re Kuhle 188 USPQ(CCPA 1975), In re Ruff 118 USPQ 343 (CCPA 1958).

Muller et al. discloses a monolith catalyst.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use a monolith as taught by Muller et al. in the Deller et al. catalyst support because it is merely one of a variety of catalytic shapes.

Claims 26-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiozaki et al. (USPN 4,366,093) in view of Eichhorn et al. (USPN 4,740,644).

Shiozaki et al. discloses a cylindrical molded catalyst suitable for a fixed bed reactor. The mechanical strength of the tubular moldings prepared by extrusion is smaller than compression moldings.

Shiozaki et al. does not disclose the reaction.

Eichhorn et al. discloses a supported catalyst with a tubular reactor. The oxychlorination process is carried out with careful monitoring of the temperature, since the oxychlorination reaction is highly exothermic. This system is used in the preparation of 1, 2-dichloroethane.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use note the exothermic reaction, because this common type of reaction.

### ***Response to Arguments***

Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Alexandra Elve whose telephone number is 571-272-1173. The examiner can normally be reached on 7:30-4:00 Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tu B. Hoang can be reached on 571-272-4780. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

July 7, 2008.

/M. Alexandra Elve/  
Primary Examiner, Art Unit 3742